

Attachment 5

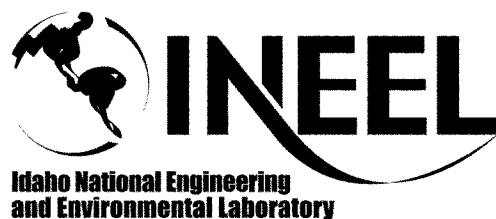
EDF-1772, Revision 1, ARA-01, ARA-12, and ARA-23 Contaminated Soil Removal Volume Estimate

Engineering Design File

PROJECT NO. 020991

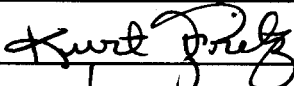
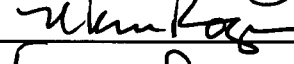
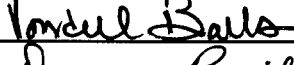
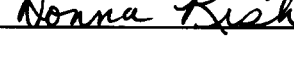
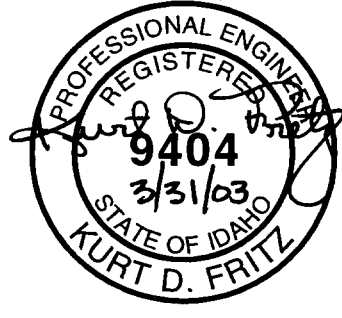
ARA-01, ARA-12, and ARA-23 Contaminated Soil Removal Volume Estimate

Prepared for:
U.S. Department of Energy
Idaho Operations Office
Idaho Falls, Idaho



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Rev. 04

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ARA-01, ARA-12, and ARA-23 Contaminated Soil Removal Volume				
1. Title: Estimate		Page 1 of 4		
2. Index Codes:				
Building/Type N/A		SSC ID N/A		Site Area 068 (ARA)
3. NPH Performance Category: _____ or <input checked="" type="checkbox"/> N/A				
4. EDF Safety Category: CG or <input type="checkbox"/> N/A SCC Safety Category: _____ or <input checked="" type="checkbox"/> N/A				
5. Summary: This EDF is to document the estimated quantities for the Remedial Design/Remedial Action of three contaminated soil sites based on the WAG 5, Operable Unit 5-12, Record of Decision (ROD). All three sites have soil contaminant concentration levels over human health and/or ecological risk. The contaminated soil will be removed and transported to the proposed INEEL CERCLA Disposal Facility (ICDF) or other onsite facility for permanent disposal. The original EDF (Rev. 0) was based on radiological survey information gathered in 1998. This revision (Rev. 1) incorporates new radiological data gathered in 2002.				
6. Review (R) and Approval (A) and Acceptance (Ac) Signatures: (See instructions for definitions of terms and significance of signatures.)				
	R/A	Typed Name/Organization	Signature	Date
Performer/ Author	N/A	K. D. Fritz/Diverse Projects		3/31/03
Technical Checker	R	N. K. Rogers/Project Engineer		3-31-03
Approver	A	V.J. Balls/Civil Structural Supervisor		3-31-03
Doc. Control		Donna Rish/6343		4/11/03
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8. Does document contain sensitive unclassified information? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, what category:				
9. Can document be externally distributed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
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11. For QA Records Classification Only: <input type="checkbox"/> Lifetime <input checked="" type="checkbox"/> Nonpermanent <input type="checkbox"/> Permanent Item and activity to which the QA Record apply:				
12. NRC related? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
13. Registered Professional Engineer's Stamp (if required)				
				

1. BACKGROUND INFORMATION

1.1 Site Description

The OU 5-12 remedial investigation and baseline risk assessment identified three sites where the contamination levels are in excess of the human health and/or ecological risk. The three sites are:

ARA-01	ARA-I Chemical Evaporation Pond
ARA-12	ARA-III Radioactive Waste Leach Pond,
ARA-23	Radiologically Contaminated Surface Soils and Subsurface Structures Associated with ARA-I and ARA-II

1.2 Remedial Action

1.2.1 Contaminated Soil

The remedial action is to excavate the contaminated soils and haul these soils to the INEEL CERCLA Disposal Facility (ICDF) or other onsite location. The goal is to excavate the contaminated soils while minimizing the soil volume sent to the IDCF. This is accomplished by excavating a thin layer followed by field screening/sampling to identify the contamination boundary for the next layer.

ARA-01: ARA-I Chemical Evaporation Pond:

This area is shown on drawing C-7 (DWG-516012). The site contains a large basalt outcropping that covers approximately 15% of the excavation area. The "first cut excavation" shall be 3 inches in depth or to basalt outcropping, whichever is the lesser depth.

ARA-12: ARA-III Radioactive Waste Leach Pond:

This area is shown on drawing C-8 (DWG-516013). The site contains many large rocks (2 to 3 feet in diameter) that will be removed and disposed with the contaminated soil. The "first cut excavation" shall be 3 inches in depth or to basalt outcropping, whichever is the lesser depth.

ARA-23: Hot Spots Inside the SL-1 Burial Ground:

This area is shown on drawing C-3 (DWG-516008). The source of radiological contamination may be from the surface soils or from highly contaminated material below the surface. The "first cut excavation" shall be 6 inches in depth.

ARA-23: Haul Road Leading to SL-1 Burial Ground:

This area is shown on drawing C-4 (DWG-516009). This contamination likely is a result of material falling off objects as they were dragged to the SL-1 Burial Ground. The "first cut excavation" shall be 6 inches in depth.

ARA-23: ARA-I Facility:

This area is shown on drawing C-5 (DWG-516010). The potential contamination found in this area is Cesium-137, however, could not be identified due to highly contaminated material being stored in the area (within the CERCLA storage unit). Upon moving the stored material, the Contractor will screen the

ARA-I area and identify the areas for Subcontractor excavation. There is asphalt covering approximately 10% of the area. Once identified, the "first cut excavation" shall be 3 inches in depth within the limits of the ARA-I area. Estimated quantities shown for the ARA-I Facility were based on radiological survey information from the 1998 survey.

ARA-23: ARA-II Facility:

This area is shown on drawing C-5 (DWG-516010). There is asphalt covering approximately 50% of the area. The contamination under the asphalt may be high. The reactor foundation should be below excavation depth and shall remain in its original location. The "first cut excavation" shall be 6 inches in depth.

ARA-23: Soil Areas A and C:

These areas are shown on drawings C-4 (DWG-516009) and C-6 (DWG-516011). This area has been excavated approximately 3 inches during a 1999 treatability study and the contaminated soil was stockpiled. In both areas, the Subcontractor shall completely remove the contaminated soil stockpiles. In Area C, the Subcontractor will remove 3 inches and 6 inches over the haul road area. In Area A, the "first cut excavation" shall be 3 inches in depth.

ARA-23: All Other Areas:

This area is shown on drawings C-2 (DWG-516007) through C-6 (DWG-516011). The type of contamination found in this area is primarily Cs-137. This contamination likely is in the top 3 inches. Due to the size of this area, excavation activities will be limited to plots no larger than 10 acres.

The "first cut excavation" of a plot shall be 3 inches in depth. A Rad Con Tech will perform field screening to determine the boundary of any further contamination that exceeds the Remedial Action Goal. Further excavation will follow in the identified hot spots until all contamination above the remedial action goals is removed.

Based on the excavation depths listed above, the initial excavation soil quantities are calculated utilizing Terramodel land modeling software. The subsequent excavations are based on limited field sampling data. Actual quantities will depend on the actual depth of contamination at each site. Both soil volumes are shown on page 4 of this EDF. Total estimated quantities are compared to the total estimated quantities shown in the WAG-5 ROD.

WAG 5 (OU 5-12) Contaminated Soil Volume Estimated Chart (Phase II)											
Site	Layer	Area (ft ²)	Projected Area' (ft ²)	Initial Excavation		Subsequent Excavations ²		Total Estimated		ROD Estimated Volume (ft ³)	Notes
				Depth (in)	Volume (ft ³)	Volume (ft ³)	Volume (yd ³)	Volume (ft ³)	Volume (ft ³)		
ARA-01	1st Layer	32,142	33,765	3	8,441	313	625	16,882			
	Subtotal				8,441	313	625	16,882	25,324	64,310	
ARA-12	1st Layer	54,434	57,182	3	14,296	529	1,059	28,591			
	Subtotal				14,296	529	1,059	28,591	42,887	53,933	
ARA-23	Other areas	1,328,552	1,395,625	3	348,906	12,922	8,615	232,604			
	ARA-II	130,806	137,410	6	68,705	2,545	2,545	68,705			
	ARA-I	23,385	24,566	3	6,141	227	152	4,094			
	Haul road	25,547	26,837	6	13,418	497	994	26,837			
	Area A stock piles ³				4,185	155	0	0			
	Area C stock piles ³				24,300	900	0	0			
	Asphalt Area	7,824	8,219	3	2,055	76	152	4,110			
	Spot Excavation ⁴	52,669	55,328	3	13,832	512	512	13,832			
	Inside SL-1	11,867	12,466	6	6,233	231	115	3,117			
	Subtotal				487,776	18,066	13,085	353,298	841,074	1,255,000	
Rock Area (ARA-23)	1st Layer	45,608	47,911	12	47,911	1,774			47,911		Will be done separately
	Total Volume ft^3				558,423			398,772	957,195	1,373,243	
	Total Volume yd^3					20,682		14,769	35,452	50,861	70% of ROD

¹ Scale conversion factor (State Plane to Project Plane): 1.0002313. Areas also increased by 5% to account for construction tolerances to excavation boundaries.
² Subsequent excavations are estimates based on limited field sampling data.
³ Initial and Subsequent excavations quantities included in "Other areas" for Areas A & C.
⁴ Spot excavations are small contaminated areas outside the large excavation boundaries.